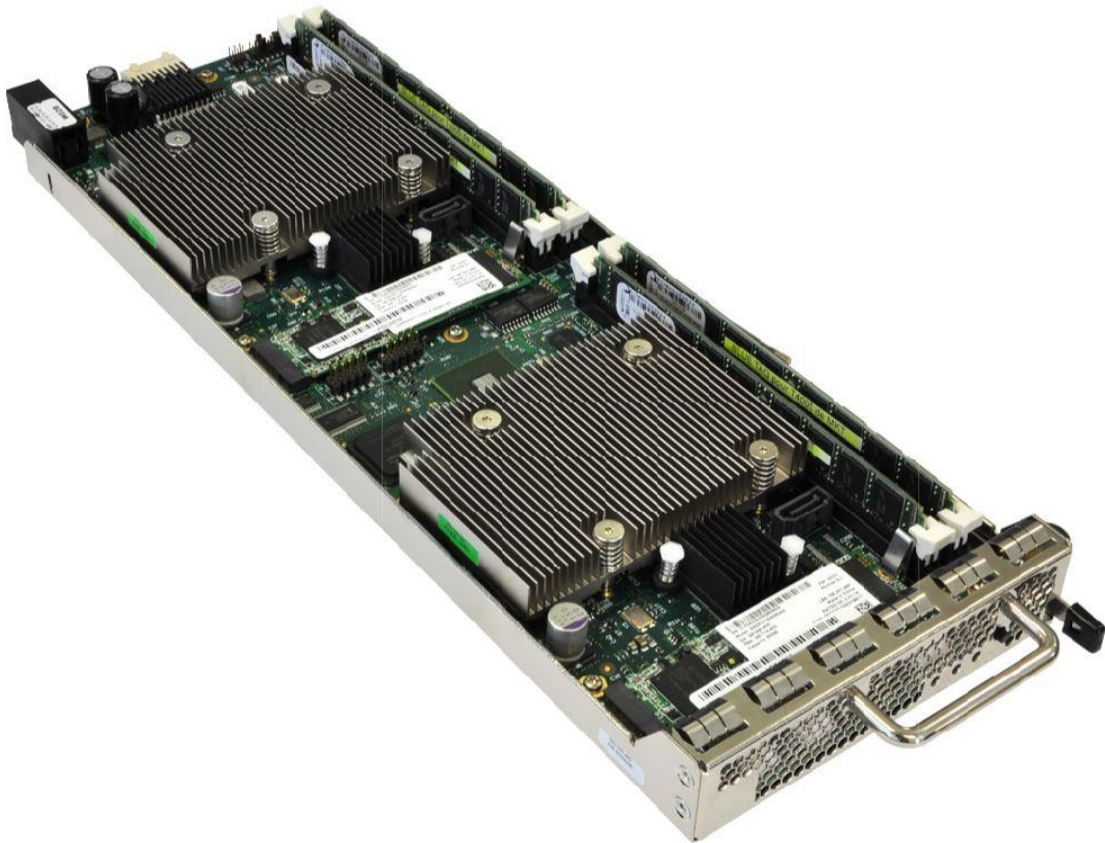


» Application Note «



MSP802x Intel® AMT/KVM Configuration
Revision 2.0 – November 2015

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Introduction

The MSP802x includes a KVM (Keyboard Video Mouse) feature to access each of the two independent i7 CPUs. The KVM is provided by the Intel® AMT technology embedded in the Intel® Lynx Point PCH; the connection is made through the SYMKLOUD backplane via the **MSP802x interfaces F1 and F2**.

To facilitate the configuration, Kontron has implemented a remote session configuration page in the SYMKLOUD System Monitor.

This application note introduces:

1. How to provision the MSP8020 Intel® AMT from the Kontron System Monitor
2. How to configure the SYMKLOUD switch to grant network access to the Intel® AMT
3. How to launch a KVM session from the SYMKLOUD System Monitor (Java-applet) and RealVNC®'s Viewer & Viewer Plus

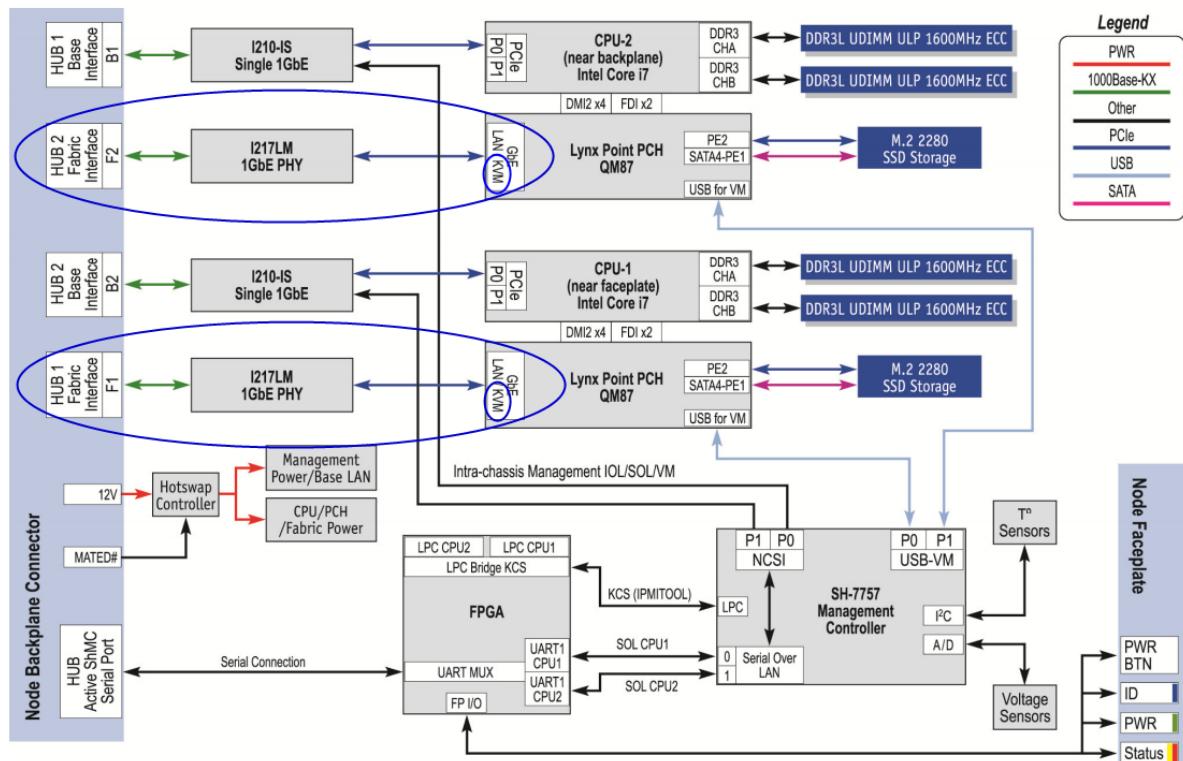


Figure 1 - MSP802x Block Diagram

1- Provisioning the Intel® AMT IP address and password

Prerequisites

1. Available access to the SYMKLOUD System Monitor (WebGUI)
2. The MSP802x (BMC) Management IP must be in the same subnet as the System Monitor
3. The latest SYMKLOUD firmware bundle should be installed

Refer to the SYMKLOUD System Monitor User Guide section 9 “Network configuration” to customize the MSP802x (BMC) management IP. Whether set to the default value or customised, the management IP of each Node can be found in the ‘Monitor’ section of the SYMKLOUD System Monitor, as in the example below:

The screenshot shows the SYMKLOUD System Monitor WebGUI interface. The browser address bar displays `172.16.113.139/monitor.html#!/platform-1/node-2`, with the IP address circled in blue. The page header includes the Kontron and SYMKLOUD logos. The breadcrumb navigation shows `Dashboard > Monitor > Platform #1 > Node 2`. The main content area is titled 'Components' and features a 'Multi-Platform' sidebar on the left and a 'General Information' panel on the right.

Multi-Platform Sidebar:

- All components (dropdown)
- Platform #1 (expanded, with a green checkmark icon)
 - HubNode 1: MSH8900, 172.16.113.139
 - HubNode 2: MSH8900, 172.16.95.175
 - Node 1: MSP8000, 192.168.8.129
 - Node 2: MSP8020, 172.16.117.206** (highlighted with a blue box)
 - Server 1: 172.16.0.128
 - Server 2

General Information Panel (Node 2):

HubNode 1 : MSH8900	
Node 1 : MSP8000	Node 2 : MSP8020 (circled in blue)
Node 4 : MSP8020	

General Information	
Name:	Node 2
API Node number:	2
Model:	MSP8020
Board Status:	Active, M4
Management IP:	172.16.117.206 (circled in blue)
Health:	

Figure 2 - MSP802x Management IP

Provisioning

From the MSP802x 'Server X' remote access configuration page:

1. If desired, configure the Java-applet KVM password and click 'Save'
2. Configure the desired IP address settings for the Intel® AMT and click 'Save'
3. Click PROVISION
4. The provisioned Server/CPU will reboot immediately and push the configuration to the Intel® AMT

Access the server's configuration page

The screenshot displays the configuration interface for the MSP802x. On the left, a sidebar titled 'Multi-Platform' shows a tree of components including HubNodes, Nodes, Servers, and a PSU. A blue arrow points from the text 'Access the server's configuration page' to the 'Server 1' entry. The main configuration area is divided into sections: 'General Information' (Name: Server 1, Board Status: Active, M4), 'Remote access password' (with a password field and a 'SAVE' button), and 'Network Interfaces' (MAC: 00:a0:a5:80:3a:51). A blue box highlights the 'Remote access password' and 'Network Interfaces' sections, with the text 'Configure password and IP address' overlaid. Below the network settings are 'SAVE', 'PROVISION', and 'REMOTE ACCESS' buttons. A blue arrow points from the 'PROVISION' button to a 'Network Provisioning' dialog box at the bottom. This dialog box contains the text: 'Configuration will be applied to the server and it will be rebooted. This provisioning process will require 3-5 minutes before KVM activation. Are you sure?' and has 'OK' and 'CANCEL' buttons.

Figure 3 - MSP802x Intel® AMT Provisioning

Next step

Once each CPU on the MSP802x is provisioned, it is important to configure the SYMKLOUD MSH89xx switch to grant network access to the Intel® AMT.

Please continue reading the next section: Switch Configuration to Access the Intel® AMT/KVM.

2- Switch Configuration to Access the Intel® AMT/KVM

Prerequisites

- Available access to the SYMKLOUD MSH89xx switches management GUI/CLI (Refer to the corresponding MSH89xx user guides, as needed)
- Know the slot# or position (node#) in which the target MSP802x node is installed

Concept

The Intel® AMT of each MSP802x CPU is accessible through the **respective fabric interface (F1 for CPU1 and F2 for CPU2)**. Consequently it's important to configure the SYMKLOUD switch to grant access to those interfaces from your host computer¹. The SYMKLOUD block diagram below shows the mapping of physical ports in both the switch, as well as each CPU/Server on the MSP802x.

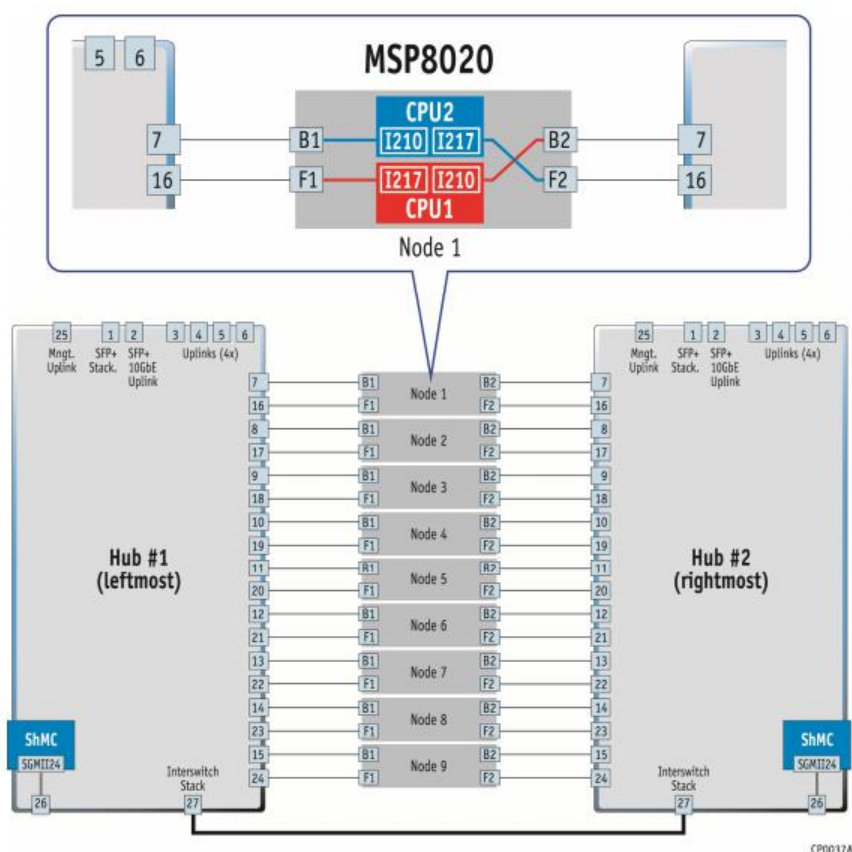


Figure 4 - MSP802x CPU Ethernet Connections

¹ Any required VLAN must be set in the MSH89xx switch as the default or native VLAN for the each AMT's fabric port, since the Intel AMT does not support VLAN tagging (IEEE 802.1q).

Recommended Switch Configuration

Various options are available to achieve MSP802x KVM access from a host computer; the method recommended by Kontron is detailed below:

Begin by provisioning the Intel® AMT with an IP address within the SYMKLOUD management subnet (See Section 1-: “Provisioning the Intel® AMT IP address and password” for more details)

Next, configure the corresponding Fabric switch ports (connected to Intel® AMT) to communicate on the management VLAN, by setting each ‘Native VLAN’ or ‘Port VLAN’ (PVID) to 4093:

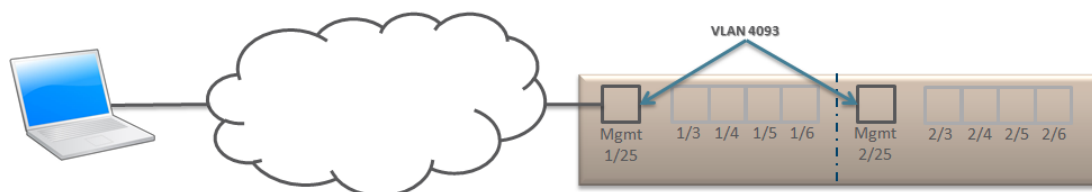


Figure 5 - Recommended Network Connection

Steps

1. SYMKLOUD switch ports that need KVM communication can be identified by referring to the SYMKLOUD network block diagram (Figure 4).
Here are three examples:
 - Intel® AMT of MSP8020 CPU-1 in slot 1 is connected to the switch #1 port 16
 - Intel® AMT of MSP8020 CPU-2 in slot 1 is connected to the switch #2 port 16
 - Intel® AMT of MSP8020 CPU-1 in slot 5 is connected to the switch #1 port 20
2. Change the switch “port VLAN ID” to VLAN 4093. The example below shows the MSH8900 Switch Web GUI with ‘Switch 1’, configured to allow access to MSP8020’s Intel® AMT of CPU-1 for the nodes in slots 1 and 5.
3. Validate the configuration (provisioning & network access) by pinging the provisioned IP address of the Intel® AMT from your host computer

kontron **SMBStaX™ GigaBit Ethernet Switch**

Switch 1

Global VLAN Configuration

Allowed Access VLANs	1,4093,4094
Ethertype for Custom S-ports	88A8

Port VLAN Configuration for Switch 1

Port	Mode	Port VLAN	Port Type	Ingress Filtering	Ingress Acceptance	Egress Tagging	Allowed VLANs	Forbidden VLANs
1	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1	4093,4094
2	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1	4093,4094
3	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1	4093,4094
4	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1	4093,4094
5	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1	4093,4094
6	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1	4093,4094
7	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
8	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
9	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
10	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
11	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
12	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
13	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
14	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
15	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093,4094	
16	Hybrid	4093	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
17	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
18	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
19	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
20	Hybrid	4093	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
21	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
22	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
23	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094
24	Hybrid	1	C-Port		Tagged and Untagged	Untag Port VLAN	1,4093	4094

Figure 6 - AT8900 switch VLAN configuration page

3- Launch a KVM Session (Java-applet) from the Kontron System Monitor

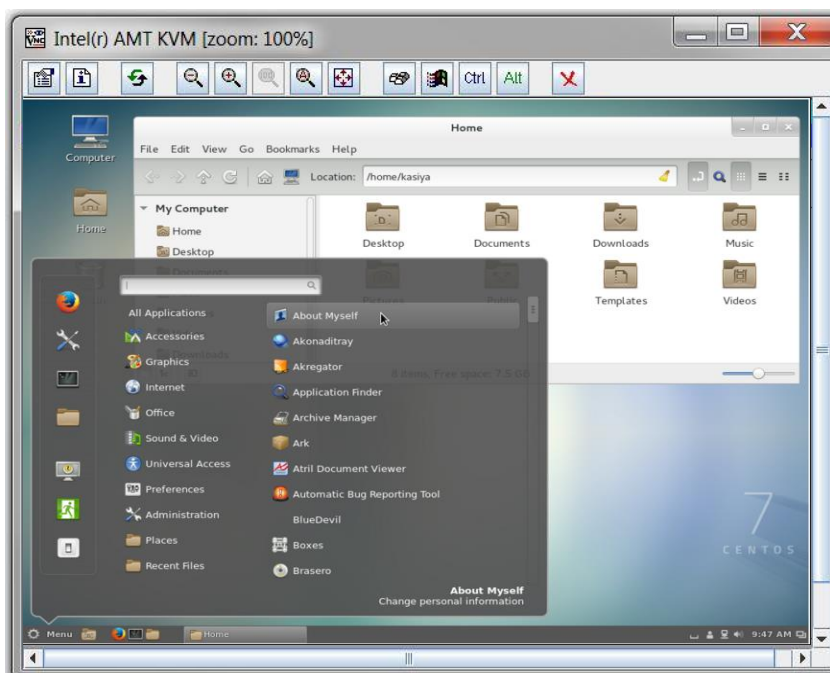
Once the MSP802x's CPU Intel® AMT are provisioned and the network is properly configured for KVM access (through interfaces F1 and F2), launch the KVM session.

Prerequisites

- Available access to the SYMKLOUD System Monitor
- Ability to obtain a ping-response from the target MSP802x's (BMC) Management IP
- Ability to obtain a ping-response from the MSP802x's target CPU/Server Intel® AMT IP
- The Intel® AMT IP address is entered in the "Network Interfaces" section of the System Monitor for the relevant Server/CPU.
(See Annex A: for details on how to confirm the Intel® AMT IP address, e.g.: when assigned via DHCP)
- Kontron recommend using Firefox to launch Java-applet KVM sessions. While other web-browsers are supported, Firefox's default settings are more permissive with pop-ups and Java security

Steps

1. From the target MSP802x/Server's Remote access configuration page, click on REMOTE ACCESS



2. The System Monitor will download the KVM Java-applet from the MSP802x BMC and open it on the host computer²

² The download URL, as well as the applet downloaded can be conserved for later re-use to contact the same node provided that network connectivity, as well as the BMC and AMT IP addresses, have not been modified.

4- Launch a KVM Session (RealVNC® Viewer) and Mount a Virtual Drive

Launch the KVM session using RealVNC® Viewer or RealVNC® Viewer Plus once the MSP802x's CPU Intel® AMT are provisioned and the network is properly configured for KVM access (through interfaces F1/F2).

Only RealVNC® Viewer Plus allows mounting a virtual drive to the MSP802x CPU, for example an OS Installation DVD-ISO file.

Prerequisites

- Ability to obtain a ping-response from the MSP802x's target CPU/Server Intel® AMT
- Installed version of RealVNC® Viewer (no Virtual Device support) or Viewer Plus

Steps to connect:

- Use the Intel® AMT IP address to access the target MSP802x Server with RealVNC® Viewer Plus
 - a. RealVNC® Viewer : Use the password configured in the SYMKLOUD System Monitor (Default: Kc1B0!i4)
 - b. RealVNC® Viewer Plus (Username: admin, Password: Kontron!1)

Steps to mount virtual media (Viewer Plus only):

- Click the Mount Disk Images (toolbar button)
- In the mount Disk Images dialog, select your image type and locate it
 - CD/DVD image, browse to a valid .iso file.
 - Floppy disk image, browse to a valid .img file.
- Click the on the mount button
- To restart the Server and boot from this virtual device, click the Power button (toolbar button), choose Reset and then the appropriate boot option (CD/DVD/Floppy)

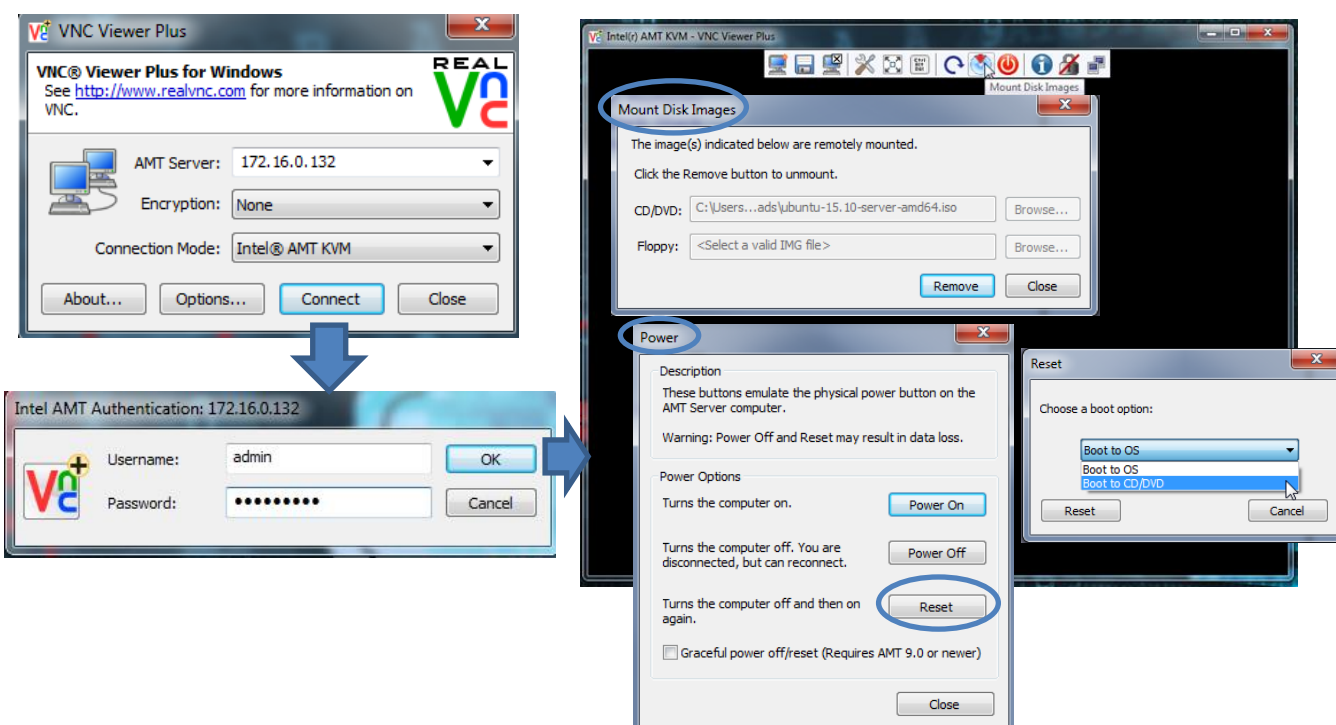


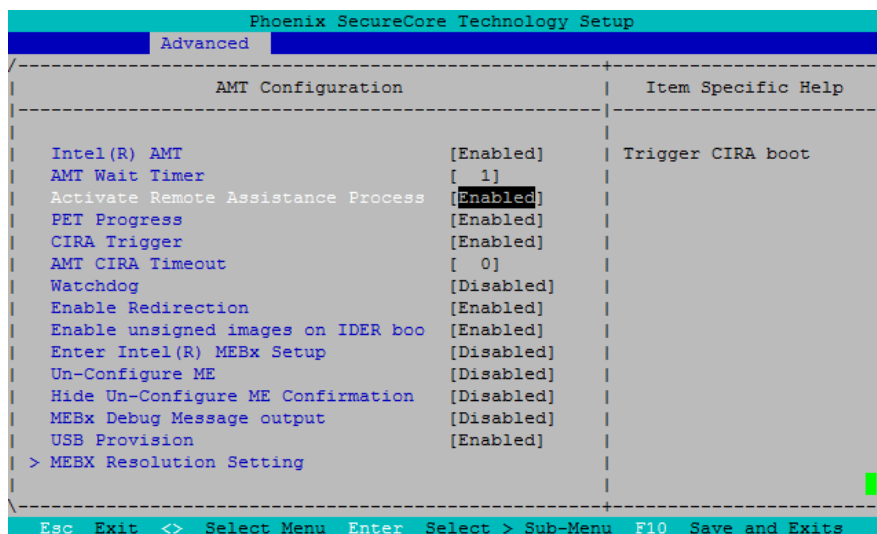
Figure 9 – Sample: KVM Session (RealVNC® Viewer Plus)

Annex A: Confirm the Intel® AMT IP address: using the BIOS menu

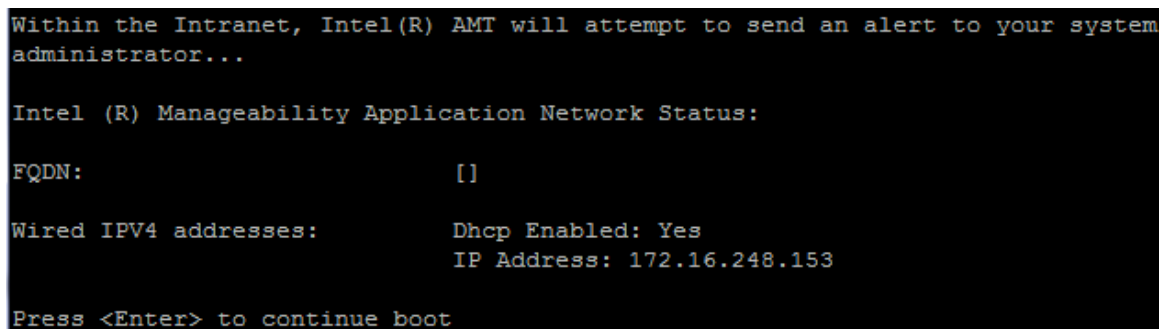
When provisioning the Intel® AMT to obtain an IP address via DHCP, the assigned address cannot be determined from the System Monitor.

In order to confirm the current IP address of the Intel® AMT, whether DHCP-assigned or static, follow these steps:

1. Access the BIOS menu from a serial console.
2. Navigate to Advanced -> AMT Configuration
3. Enable the "Activate Remote Assistance Process"



4. Save and exit
5. When rebooting, the following screen will show up with the Intel® AMT IP address.



6. Press enter to continue the boot process.

NOTE: As long as the BIOS option "Activate Remote Assistance Process" is enabled, every reboot will require an <enter> keypress to continue past the Intel® AMT network status page.

It is recommended to disable this option once the Intel® AMT IP-address has been noted.

Annex B: Intel® AMT IP provisioning & KVM: IP address via DHCP

Steps

1. Provision the Intel® AMT IP address via DHCP

Network Interfaces MAC : 00:a0:a5:75:3e:ab

Source	IP	Netmask
DHCP ¹		

² ³

SAVE **PROVISION** **REMOTE ACCESS**

2. Determine the IP address the assigned to the Intel® AMT by the DHCP server by one of the following methods:
 - a. Enable the "Activate Remote Assistance Process" BIOS option (see Annex A: for more details), or
 - b. Use switch-level DHCP snooping, or other means of network traffic inspection (not covered), or
 - c. Review DHCP-server logs and locate the record corresponding to the target MSP802x's Intel® AMT MAC address

Network Interfaces MAC : 00:a0:a5:75:3e:ab

```
[root@server ~]$ tail -f /var/log/messages
Nov 13 13:19:03 server dhcpd: DHCPREQUEST for 192.168.10.27 from 00:a0:a5:75:3e:ab via eth1
Nov 13 13:19:03 server dhcpd: DHCPACK on 192.168.10.27 to 00:a0:a5:75:3e:ab via eth1
```

(displayed in the SYMKLOUD System Monitor for reference)

From the DHCP server logs:

3. Save the new address to the SYMKLOUD configuration page

Network Interfaces MAC : 00:a0:a5:75:3e:ab

Source	IP	Netmask	Gateway
DHCP ¹	192.168.10.127 ^{1a}	24 ^{1b}	192.168.10.1 ^{1c}

²

SAVE **PROVISION** **REMOTE ACCESS**

4. Launch the MSP802x KVM Java-applet

Network Interfaces MAC : 00:a0:a5:75:3e:ab

Source	IP	Netmask	Gateway
DHCP ¹	192.168.10.127	24	192.168.10.1

SAVE **PROVISION** **REMOTE ACCESS**